

Abstract

The invention is the novel use of dispersion compensation in a long haul wavelength division multiplexed high capacity optical transport system which has very many channels packed extremely closely together, in order to greatly reduce the deleterious effects of four-wave mixing. Four-wave mixing is an exchange of energy between nominally independent channels, arising from the fundamental fibre non-linearity, which has the effect of degrading transmission quality. Conventional systems make use of fibre dispersion compensating modules to overcome the effects of fibre dispersion. In such systems, it has been discovered that the exact distribution of fibre dispersion along the optical link (the 'dispersion map') strongly influences the degree of four-wave mixing, and hence the degradation in transmission quality. Furthermore, by carefully designing the dispersion map of the optical fibre link it is possible to significantly reduce the effects of four-wave mixing, allowing total system capacities and reaches to be achieved that would not otherwise be attainable. As the invention only requires the use of fibre dispersion compensating modules, the cost of implementing such a concept will not make much difference to the overall system cost.